ATMOSPHERIC AIR.

(Concluded from our 93d Number.)

The most important function of atmospheric air is to support animal life; and this object is attained in the act of breathing, by which the air is inhaled into the lungs, which are said to present a greater surface in their various ramifications than the whole body; and on this extended surface the blood is exposed, through the medium of a thin skin, to the action of the respired air, and imbibes from it *oxygen*, which is a component of the atmosphere, and *caloric*, or heat, which is also combined with it.—These mingled in the blood are thus diffused throughout the whole system; and the other components of the air, which are not useful to animals, are thrown out in the act of respiration. Dr. Menzies ascertained that every time the blood passes through the lungs, it gains more heat than is equal to one degree of Fahrenheit's thermometer; and it has been ascertained, that when an animal is placed in such a temperature as to require no more heat, the blood, while it imbibes the necessary quantity of *oxygen*, loses all affinity or attraction for the caloric of the air, and consequently receives no more. Those animals which do not breathe, such as fishes and insects, have a bodily temperature, little superior to the medium in which they live. The temperature of all animals which do breathe is in proportion to the quantity of air they breathe in a given time; man, quadrupeds, and the whale tribe have a heart, and breathe through lungs, in consequence of which heat is evolved in the circulation of the blood. They are consequently called *warm-blooded animals*. Some atheists tell us, that the organs of the body have been formed by what they call *appetency*; that is, they have acquired their various faculties by adapting themselves to their various employments through a long series of generations. But will any man of common understanding say he believes this to have been the way in which the lungs acquired the faculty of decomposing air; and also that this supposition of the atheist will account for the composition of this air, which so exactly suits the operation of these lungs, and is found to contain the proper and exact portion of oxygen and caloric that the animal requires.

It is worthy of remark that *cold-blooded animals* that are not furnished with this breathing apparatus, are so constituted that their temperature changes with every change of the surrounding medium. Crawford says, he has seen frogs so frozen as to *chip like ice*, which yet when carefully thawed, have been completely reanimated. To meet the wants of those animals which breathe, the air is composed of about seventy-nine parts of *nitrogen* to twenty-one of *oxygen*. The nitrogen, which is thrown out of the lungs as useless, is lighter than the air itself, that it may rise during the time elapsing between each respiration, and that the animal may not again inhale the unproductive air which it has just thrown out. The reason for this large proportion of *nitrogen* gas in the atmosphere, is to dilute to a sufficient degree the oxygen, which in a greater proportion would be so stimulant as to increase the action of all the vessels to such a degree as to destroy them by over excitement. Dr. Higgins caused a young man to breathe oxygen gas in its pure state for several minutes; his pulse, which was sixty-four, soon rose to one hundred and twenty beats in a minute, and with the circulation of the blood the action of all his organs became accelerated.

> "From nature's chain, whatever link you strike,
> Tenth, or ten thousandth, breaks the chain alike."

It has been ascertained by experiment, that no other gaseous body can be substituted for atmospheric air. Even water absorbs air, and thus becomes a fit element for the various tribes of creatures which inhabit it. The gills, by which fish extract the air from water, are formed like so many fine fringes; the edges of each being fringed again, and the edges of these likewise fringed, and so on, until both the human eye and microscope have been unable to find the termination to these *fringes*. In drawing water through the gills it is thus divided into particles so exceedingly minute as to render it easy to extract the air from it. *Oxygen* gas is not only a supporter of animal life, but is also an essential necessary to combustion; consequently, without air, or what is generally called a *draft*, no ordinary fire can be produced. To maintain the necessary supply of oxygen, so much of which is used in the acts of respiration and combustion, all vegetables have the power, with the help of the sun's rays, of decomposing water; one part of which they absorb themselves, and the other, which is *oxygen*, they give out to maintain the necessary supply. This oxygen, combining with the nitrogen thrown out of the lungs of animals, keeps up such an equilibrium and salubrity of the atmosphere, that the air in the most densely populated city, contains exactly the same proportions of oxygen and nitrogen, as the air of the country. The upper side of the leaf is the organ of respiration; hence, some vegetables as they only give out the oxygen by day, close the upper surfaces of their leaves during the night. The immense number of leaves indicate the importance of respiration to plants. Besides *oxygen and nitrogen* gases, there is always a certain portion of *carbonic acid gas* combined with the atmosphere; and whenever the air becomes charged with one-tenth of this gas, it is unfit for promoting combustion or supporting animal life. It has, therefore, been ordained by Providence to be the proper nutriment of vegetables; and nature has endowed them with organs proper for its decomposition. These vegetable organs seize the *carbonic acid gas* which comes within their reach; and while they appropriate it to themselves, the oxygen is thrown off to renovate the atmosphere. Thus the plant purifies what the animal has poisoned. If a sprig of mint be corked up in a phial of *bad* air, and exposed to the sun, it will *take in* the carbon, and *give out* the oxygen, so as to make the air again capable of supporting life.

How many are the uses to which air is applied! By its aid harmonious music is produced from the tender reed and the solemn organ. "Man," says a celebrated author, speaking of air, "makes it his slave, forces it to grind or to bruise, and to move for his advantage an endless variety of machinery: in a word, he harnesses it to his car, and obliges it to waft him over the stormy billows of the ocean."

E. B.

CURRAN'S ACCOUNT OF HIS FIRST SPEECH.

One day after dinner, an acquaintance of his in speaking of his eloquence, observed to Curran that it must have been born with him. "Indeed, my dear Sir," replied Curran, it was not; it was born three and twenty years and some months after me; and if you are satisfied to listen to a dull historian, you shall have the history of its nativity. When I was at the temple, a few of us formed a little debating club; poor Apjohn, and Duhigg, and the rest of them!—they have all disappeared from the stage. Upon the first night of our assembling, I attended; my foolish heart throbbing with the anticipated honour of being styled "the learned member who opened the debate;" or "the very eloquent gentleman who just sat down." All the day the coming scene had been flitting before my fancy and cajoling it; my ear had already caught the glorious melody of "hear him, hear him."—Already I was practising how to steal a cunning sidelong glance at the tear of generous approbation bubbling in the eyes of my little auditory. My mind was stored with about a folio volume of matter, but it was like a book wanting the preface; and so for want of preface to begin with, the volume was never published. I stood up trembling through every fibre; but remembering that in this circumstance I was but imitating Tully, I took courage and had actually proceeded as far as "Mr. Chairman," when to my utter astonishment and terror, I perceived that every eye was rivetted upon me. There were only six, or seven at the most, present at the time; and the little room could not have contained as many more; yet it was to my panic truck imagination, as if I were the central object in nature and assembled millions gazing upon me in breathless expectation. I became dismayed and dumb; my friends cried, "hear him, hear him;" but there was nothing to hear. My lips, indeed, went through the pantomime of articulation, but I was like the unfortunate fiddler at the